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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/501,577	08/23/2005	Allen K Murray	355870.900440	9310

7590 11/30/2009  
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EXAMINER
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KHAN, AMINA S

ART UNIT	PAPER NUMBER
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1796

MAIL DATE	DELIVERY MODE
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11/30/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/501,577	<b>Applicant(s)</b> MURRAY, ALLEN K	
	<b>Examiner</b> AMINA KHAN	<b>Art Unit</b> 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 August 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. This office action is in response to applicant's arguments filed on August 6, 2009.
2. Claims 1-13 are pending. Claims 11-13 have been amended.
3. The objection to claims 11-13 under 37 CFR 1.75(c) as being in improper form is withdrawn in view of applicant's amendments to the claims.
4. Claims 1-5 and 7-10 stand rejected under 35 U.S.C. 102(b) as being anticipated by Murray (WO 99/35491) for the reasons set forth in the previous office action.
5. Claims 5-10 stand rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Clarkson et al. (US 6,251,144) for the reasons set forth in the previous office action.

### ***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:  
  
The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.
7. Claims 11 and 13 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter

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which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 11 and 13 recite the limitation “cultivars” which lacks literal basis in the specification and is therefore considered new matter. The added limitation in the claim lacks literal basis in the specification as originally filed, see *Ex parte Grasselli*, 231 USPQ 393 (Bd. App. 1983) *aff'd mem.* 738 F.2d 453 (Fed. Cir. 1984).

### ***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1-5 and 7-13 are rejected under 35 U.S.C. 102(e) as anticipated by Murray (WO 99/35491).

With regards to claims 1-3, Murray discloses treatment of cotton fibers with water-soluble carbodiimide to form amide bonds between carboxyl and amino groups of the amino acid constituents of the protein to which cellulose multimers have been found to be attached. Murray further teaches that the fibers become more resistant to enzymatic degradation and that chemical cross-linking via compounds such as

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carbodiimide is a way to reduce loss of soluble material during washing and, thereby, extend the life of cotton fabrics, which can be construed as improving said fabrics (P25/L15-26).

With regards to claim 4, Murray teaches that 25 DPA cotton fibers can be enzymatically degraded using a process comprising the steps of sequentially treating the fibers with cellulose followed by protease (P23/L10-11). Murray further teaches producing cellulose of extremely high purity (P21/L24-26).

Murray does not explicitly teach the limitation “to yield essentially pure cellulose”. However, said yielding of essentially pure cellulose would be inherent in the teachings of the prior art because it is supported by the use of similar materials (i.e. cotton fibers, cellulase, and protease) and similar process steps (i.e. sequential enzymatic treatment of cotton fibers with cellulase and then protease). The burden is upon the applicant to prove otherwise. *In re Fitzgerald*, 205 USPQ 594. See MPEP 2112.

With regards to claims 5 and 7-10, Murray teaches enzymatic degradation of 25 DPA cotton fibers using a process comprising the steps of sequentially treating the fibers with cellulose followed by protease (P23/L10-11) and that products resulting from said degradation, such as glycoconjugates, which are disclosed as cell wall precursors, can be analyzed (P8/L6-23). This can be construed as a method of characterizing cotton fiber cell walls. In addition, Murray teaches the use of various proteases, such as trypsin, chymotrypsin, and pepsin (P21/L3), as well as the use of *T. reesei* cellulase (P22/L24).

With regards to claims 11-13, Murray teaches plant breeders directly select varieties with different fiber properties including strength and that direct selection and manipulation by genetic engineering should be more successful on the matrix protein than on the complex of enzymes needed to synthesize cellulose, which meets the claimed limitations of developing different biochemical markers for fibers of different cotton cultivars, using the markers in plant breeding to improve fiber quality, and using biochemical markers to distinguish cultivars of cotton.

Accordingly, the teachings of Murray are sufficient to anticipate the material limitations of the instant claims.

### ***Response to Arguments***

10. Applicant's arguments filed regarding Murray have been fully considered but they are not persuasive. The examiner asserts that Murray clearly teach that cottons are treated with carbodiimides to form covalent bonds specifically amide bonds between the carboxyl and amino groups of the fibers (page 25, claims 15-28; page 28, claims 4-7). Therefore the active method steps of claims 1-3 are clearly met.

The examiner asserts that Murray clearly teaches treating cottons sequentially with cellulase followed by protease to produce cellulose of extremely high purity, which meets the claimed limitation of essentially pure" Therefore the active method step of claim 4 is clearly met. Applicant's assertion of unexpected results in figures 14,15,17 and 18 is not persuasive since Murray clearly teaches treating similar fibers with similar enzymes in similar methods and would be expected to produce similar hydrolysis

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products. Applicants have not done a direct comparison of the methods of Murray and the methods of the instant application to show a difference in hydrolysis product is achieved. Regarding the applicant's argument that Murray does not address the purposes presented in the title of the application, the title purpose is not in the claims and if it were would only be intended use and would be given little patentable weight.

Regarding claims 5 and 7-10, Murray clearly teaches 25DPA cotton fibers can be degraded by sequential enzymatic treatment with a cellulase followed by a protease and monitoring the constituents released by treatment such as glycoproteins which Murray clearly teaches are cell wall precursors (pages 23-24; page 8, lines 5-25).

11. Applicant's arguments filed regarding Clarkson have been fully considered but they are not persuasive. The examiner asserts that Clarkson clearly teach that denims are treated cellulase followed by protease and analysis of the fabric afterward (column 8, lines 45-65). Therefore the active method steps of claim 5-10 are clearly met. The limitation "characterizing cotton fiber cell walls" is simply intended use and was given little patentable weight. The examiner again asserts characterization of abrasion would result in characterizing the integrity of the cellulose and therefore the cell wall. Furthermore, applicant has not provided evidence that the cell wall is removed in mature fibers and the claims are not limited to immature fibers. Applicants have not limited the claims to the types of "characterizations of the cell wall" so any method can be construed to meet this limitation. Applicant has again limited the claims to the use of purified enzymes.

12. Regarding the limitation of essentially pure cellulose, applicant's claim that no one knows what essentially pure cellulose is not supported by factual evidence. How can applicant recite a claim to an element which is known. The examiner asserts the teaching in Murray of "extremely pure cellulose" meets the claimed limitation.

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.



***Conclusion***

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to AMINA KHAN whose telephone number is (571)272-5573. The examiner can normally be reached on Monday through Friday, 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571) 272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Lorna M Douyon/  
Primary Examiner, Art Unit 1796

/Amina Khan/  
Examiner, Art Unit 1796  
November 21, 2009